

PORTABLE ELECTRONIC APPARATUS

TECHNICAL FIELD

[0001] The present invention relates to a portable electronic apparatus such as a cellular telephone.

BACKGROUND ART

[0002] Conventionally, in a cellular telephone as a portable electronic apparatus, a biaxial hinge mechanism is used as a hinge portion in order to connect a plurality of bodies composed of a second body and a first body to be openable/closable and rotatable. The biaxial hinge mechanism includes a first axial hinge for opening and closing the second body and the first body and a second axial hinge for rotating the first body, in which the second body is fixed to the first axial hinge and the first body is fixed to the second axial hinge. Such a conventional structure is disclosed in the following patent Documents.

[0003] Patent Documents 1 to 3 disclose a threaded fixing mechanism in a direction orthogonal to a rotational axis of the second axial hinge. Patent Document 4 discloses a threaded fixing mechanism in a direction parallel to the rotational axis of the second axial hinge.

[0004] Patent Document 1: Japanese Unexamined Patent Application, Publication No. 2004-218688

[0005] Patent Document 2: Japanese Unexamined Patent Application, Publication No. 2005-311004

[0006] Patent Document 3: Japanese Unexamined Patent Application, Publication No. 2006-10025

[0007] Patent Document 4: Japanese Unexamined Patent Application, Publication No. 2003-174495

DISCLOSURE OF THE INVENTION

Problems to be Solved by the Invention

[0008] However, in the above-identified Patent Documents, since one of the axial hinges (the second axial hinge) in the biaxial hinge mechanism that connects two bodies is fixed by threads in a thickness direction of a set of the second body and the first body (in an overlapping direction of the bodies), a thickness in the thickness direction of the set of the bodies increases, thereby preventing a reduction in thickness of the electronic apparatus. In addition, the biaxial hinge mechanism is formed by modularizing by die-casting with magnesium or the like; however, there is a limitation in reducing the thickness of a modular structure from a viewpoint of securing strength thereof. Therefore, there is a restriction in reduction in thickness and size of the electronic apparatus.

[0009] The present invention aims at providing a portable electronic apparatus provided with a biaxial hinge mechanism that connects a first body and a second body to be openable and closable and rotatable via a hinge portion that allows for a reduction in thickness in a thickness direction and a size of a set of the bodies in a closed state, while securing sufficient strength in the biaxial hinge mechanism.

Means for Solving the Problems

[0010] The present invention relates to a portable electronic apparatus including: a first body that is a substantially flat plate shape; and a second body that is connected to the first body via a hinge portion, in which: the hinge portion includes a first rotational axis that makes the first body transition between an opened state and a closed state with respect to the

second body, and a second rotational axis that rotates the first body with respect to the second body about an axis orthogonal to the first rotational axis, such hinge is configured by providing a fixed portion that extends in a direction orthogonal to an axial direction of the second rotational axis and rotates by way of the second rotational axis; the second body is fixed to the hinge portion so as to rotate about the first rotational axis; and the first body is fixed to the hinge portion so as to be rotatable about the second rotational axis by tightening together the fixed portion to a component constituting the first body with a screw in a direction orthogonal to a thickness direction of the first body.

[0011] In addition, the screw is used plural number.

[0012] In addition, the fixed portion preferably includes threaded holes at point-symmetrical positions about the second rotational axis.

[0013] In addition, both end portions of the fixed portion in a direction orthogonal to the axial direction of the second rotational axis preferably extend inside the first body in a direction parallel to the second rotational axis.

[0014] In addition, the fixed portion is preferably a component that can be obtained by bending a metal plate of which a thickness direction is in the axial direction of the second rotational axis.

[0015] In addition, the fixed portion is preferably formed in a shape that is symmetrical about the axial direction of the second rotational axis and that surrounds at least a portion of an inner component of the first body.

[0016] In addition, the inner component is preferably a display.

[0017] In addition, both end portions of the fixed portion in a direction orthogonal to the axial direction of the second rotational axis preferably extend inside the first body in a direction parallel to the second rotational axis.

[0018] In addition, the fixed portion is preferably a component that can be obtained by bending a metal plate of which a thickness direction is in the axial direction of the second rotational axis.

[0019] In addition, the fixed portion is preferably formed in a shape that is symmetrical along the axial direction of the second rotational axis and that surrounds at least a portion of an inner component of the first body.

[0020] In addition, the inner component is preferably a display.

[0021] In addition, the present invention relates to a portable electronic apparatus including: a first body that is a substantially flat plate shape; and a second body that is connected to the first body via a hinge portion, in which: the hinge portion includes a first rotational axis that makes the first body transition between an opened state and a closed state with respect to the second body, and a second rotational axis that rotates the first body with respect to the second body about an axis orthogonal to the first rotational axis, such hinge is configured by providing a fixed portion that extends in a direction orthogonal to an axial direction of the second rotational axis and rotates about the second rotational axis; the second body is fixed to the hinge portion so as to rotate about the first rotational axis; the fixed portion is formed in a shape that is symmetrical along the axial direction of the second rotational axis and that surrounds at least a portion of an inner component of the first body; and the first body is fixed to the hinge portion so as to be rotatable about the second rotational axis by fixing the fixed portion to the first body.